SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 1883.—Vol. XLI. LONDON, SATURDAY, SEPTEMBER 23, 1871. PRICE ..... FIVEPENCE PER ANNUM, BY POST, £1 4s.

Original Correspondence.

THE EXCURSIONS OF THE IRON AND STEEL INSTITUTE.

The Earl of Dudley, as we noticed in the Supplement to last week's Journal, received his visitors at the gates of the Round Oak Ironworks, and after the splendid samples had been inspected at the offices proceeded with them to the works, under the guidance of Mr. Fisher Smith and Mr. R. S. Casson. The party first went to the large merchant mill, where the heavier classes of merchant iron were being rolled, and from thence to the plate mill, which is driven by the same engine. In this latter mill large boiler-plates and chequered footplates were being rolled. From here a move was made to the forges, two in number, driven by a horizontal high-pressure engine. The machinery consists of two forge trains, each containing three sets of rolls, two large helves, and two pairs of shears; there is also a 4-ton steam-hammer. Two other pairs of cutting-down shears are driven by an independent vertical engine. Next to the forge is the 12-in. mill and the 8-in. mill, both driven by a vertical engine, and to each of these there are two heating furnaces. This point was the centre of attraction, for to two of the heating furnaces, one in each mill, Howatson's patent is applied. It will be remembered that a paper written upon this patent by Mr. A. Smith, consulting engineer of Dudley, was to have been read at the morning meeting of the Institute before the members came to Round Oak, but time would not permit, and the reading was adjourned till next meeting, but drawings were exhibited in the room that would have illustrated the paper, and the importance of the invention had got abroad, so that all connected with the manufacture of iron hastened to see the invention as applied here. Mr. Casson explained to the Earl and those around him the principle of the process—that it simply consisted in supplying hot instead of cold air to the grates of the furnaces, and that this was accomplished in a very simple manner by closing the ordinary opening through which the air is admitted to the grate, and causing the fire to draw that necessary for combustion through flues made in the base of the stack, and under the bed of the furnace. Mr. Casson also explained that the 12-in. mill-furnace was saving per week about 6 tons of coal and 1 ton 3 cwts. of iron, that he found the lining last much longer, and the iron come out of the furnace in a fitter state for rolling than is usual. We hear since that the fire-grate has been lessened, and the bed of the furnace lengthened, so that with still less fuel a much larger quantity of iron can be prepared at each heat. The visitors were surprised at the simplicity of the invention, and the extraordinary advantages gained from its application, and some of the principal members of the Institute made a special visit on the following day, that they might make a still closer scrutiny, and we hear that they expressed themselves highly satisfied with the results.

Passing on from these furnaces the company went to the 7-in. mill and hoop mill, and from thence to the two capacious warehouses in which the finished iron is stored, preparatory to being loaded into the railway trucks. The New Forges, standing near the main works, were also visited; these have been erected about six years, whilst the others have been standing about fourteen years, the object being to make a sufficient supply of puddled bars to keep well in advance of the work. The principle upon which they are laid out is good, for the whole of the 28 puddling furnaces are all placed in a semicircle, the machinery being as near as possible to the centre of the diameter. All the furnaces are, therefore, at equal distances from the helves, and yet sufficiently near; there is, consequently, no confusion, and the puddlers have not to cross each other's standing places when taking their heats to the hammer. There are two vertical forge engines placed side by side, deriving their steam from six cylindrical boilers at the back of them, standing out clear of the works. Each engine drives a forge train, a helve, and a pair of shears. The party moved from the ironworks to the New Level Blast-Furnaces, which are only a few hundreds yards distant, where a large quantity of pigs, from which the finished iron is produced, are made. There are four furnaces, three of them in blast, whilst the other is having the apparatus attached for taking off the gas. Addenbrook's plan is adopted here, as at the Coneygree furnaces, and a stack 280 ft. high by 12 ft. square, from top to bottom, is used for drawing off the gases. The party examined the elaborate blast main which has been fixed at the back of the furnaces, and other new and extensive alterations now taking place, and which are calculated to improve the plant.

Several of the visitors, under the guidance of Mr. Wm. Jeffries, visited the Nine Locks Pit, which is not far from the furnaces. It was at this pit that thirteen colliers were imprisoned for nearly a week by the flooding of the mine: this occurrence at the time, it will be remembered, created quite a sensation throughout the country. An enormous beam-engine had been erected a few years before the accident, near one of the shafts, in which there were placed three lifts of pumps. The winding-engine is also a very good one, and on the occasion to which we refer a tank was attached to it, which brought up more than 30 cwts. of water about every half-minute; and this, combined with the mighty efforts of the large pumping-engine, at last succeeded in reducing the water. It was never thought that the men would be brought out alive, for should they have escaped to the extremities of the workings, which rise gradually from the bottoms of the shafts, it was supposed they would be suffocated, for every possible approach by which air could have reached them was stopped by the water. In time the pump and tank reduced the water, although at first they seemed to have no effect upon it, and one or two courageous fellows—who by the way are never wanting in these rough districts—were able to proceed into the mine upon rafts, and rescue the entombed colliers. They had, by taking the advice of an old experienced miner, Zacariah Pearson, lain with their mouths close to the surface of the water, so that each time the tank came with a bang down into it, at the bottom of the shaft, it acted as a sort of plunger, and forced the fresh air through to them. The poor fellow whose name we mention above also gave his mates spiritual advice, whilst they were thus on the brink of death; and, sad to say, he was killed in the same pit, a short time since, by a fall of coal. The whole of the sufferers were brought to the surface alive, with one exception, and there is no doubt he would have been saved had he not gone mad with fright, and rushed into a portion of the pit where air could not possibly get to him. This pit is considered one of the safest on the estate, and the Earl always chose it, both before and after the accident, for a descent when bringing visitors into the district. It is not known to this day what was the origin of this sudden influx of water.

After the party had thoroughly enjoyed the things set before them, and the numerous speeches of his lordship at the luncheon, of which we spoke last week, they returned to their train, in which they were conveyed to Castle Mill, where they alighted, and walked to the famous limestone caverns under Dudley Castle. These were brilliantly illuminated with gas, candles, and coloured fires, which gave an exceedingly pretty effect. These extensive excavations have resulted from working the limestone from the Silurian formation, which is here thrown up to the surface. Several yards below where the main walk goes through the caverns an arm of the canal runs, which was formerly used for taking away the limestone as it was worked, and all along this, close to the edge of the water, were placed candles, throwing their shadow into the water, and appearing as if there were twice the number. The viewing of this subterranean retreat finished the second day's excursion.

On Thursday one of the most enjoyable excursions that has ever taken place in the district was made. As we intimated in former articles, the Dudley Institute of Mining Engineers took the opportunity of the Iron and Steel Institute visiting the Black Country to invite their coadjutors from the North, at whose hands they had received such kindness when they visited their district two years back. And so cordially was this invitation received that, with the members of the Dudley Institute themselves, over 200 took part in the day's proceedings. Everything had been arranged by the indefatigable secretary, Mr. Henry Johnson, who in everything he does throws his whole energies, and carries it out thoroughly, so that the day was pregnant with geniality and heartiness. At 9 o'clock a champagne breakfast was given by the Earl of Dudley, at the Dudley Arms Hotel, at which Mr. W. Jeffries, chief agent over the collieries on the west side of Dudley, presided, having on his right Prof. Forbes, and on the left Mr. F. S. Shenstone. Mr. Cooksey, president, and Mr. Checkley, vice-president of the Dudley Institute, officiated as vice-Chairman. After the company had partaken of the repast, the Chairman welcomed the visitors, and in the course of his speech made reference to Mr. Johnson's paper "On the South Staffordshire Coal Field." He expressed it as his opinion that it would be many years before the present field was worked out, and when necessity required it he had no doubt that the Earl of Dudley would explore for coal beneath the Permians. He afterwards gave the toast of "The Visitors," to which Mons. Lambert (representative of the Belgian iron trade, sent to this meeting of the Iron and Steel Institute) and Mr. Whitwell responded. The latter was of opinion that Staffordshire would continue to hold a high and proud position, and gave as a reason the contrast between its ductile raw material and the hard stones, which were so difficult to smelt, found in the Cleveland district. Mr. Cooksey proposed "The Health of the Earl of Dudley," which was drunk with musical honours. "Success to the Dudley Mining Institute" was given by Prof. Forbes, and suitably acknowledged by Mr. Johnson.

THE MANUFACTURING INDUSTRY OF SCOTLAND.

THE THREAD WORKS OF PAISLEY.

In the Supplement to the Journal of September 2 we presented our readers with a description of the works of J. and J. Clark, thread manufacturers, of Paisley. Any notice of this important industry would be incomplete without a reference to the splendid works of Messrs. J. and P. Coats at Ferguslee, which have been very much extended and developed within recent years. Ferguslee is a suburb of the old town of Paisley, from the centre of which it is distant fully a mile. Here, in the earlier stages of the industry of which they are now the pioneers, the Messrs. Coats built a mill of limited dimensions, when compared with their present imposing range of buildings. The Ferguslee factory, as it now stands, occupies two sides of a square, with a supplementary erection behind, and throughout its entire length it rises to the height of four storeys, with attics. The north front is the older portion of the works, and measures 390 ft. in length, with a handsome bell turret rising from the centre. The east front is 380 ft. in length, and is built to harmonise with the north front, although constructed at a considerably later date, while the mill behind, or within the angle formed by the main building, is upwards of 100 ft. in length, giving a total frontage of 870 ft. This, of course, does not include several smaller buildings, used as outhouses for carrying on operations of minor importance. The whole works cover several acres of ground, and they are arranged with that economy which our manufacturers now-a-days seldom fail to carry out in the management of space and time.

The machinery connected with the Ferguslee Thread Works is of a very superior and powerful kind. The motive-power is supplied by six large engines, coupled in pairs, and placed in different parts of the factory. Four are built on the compound principle, and two are single condensing engines. Each pair indicates respectively 1000, 700, and 500-horse power. By scientific men, and in schools of practical mechanics, the largest pair are spoken of as models. They were designed by Mr. William M'Naught, of Manchester, and built by Messrs. Musgrove and Sons, of Bolton. They have two 45-in. and two 50-in. cylinders, with a stroke of 9 ft. The fly-wheel is 24 ft. diameter, and weighs no less than 45 tons. Each of the working beams weighs 10 tons, and the entablature, which is supported on four beautiful Doric columns, is 15 tons in weight. There are upwards of 2000 tons of cube masonry under these engines, the majority of the stones used weighing 7 and 8 tons each. The engine-house itself is 56 ft. long, 20 ft. wide, and consists of four flats, the total height being 56 ft. It may be interesting to state in reference to the roof, which is well worthy of attention, that it is divided into compartments by cast-iron beams (the breaking weight at the centre of 70 tons), designed for lifting the various parts into their places. In short, the construction of these engines, and the adaptation of this building to their requirements, are engineering feats of no ordinary kind. Steam is generated in eight large two-flued horizontal boilers, each 7 ft. 6 in. diameter by 30 ft. in length. For the supply of heated water to the boilers, they are fitted with one of Green's patent economisers, consisting of 450 pipes. Of the other engines, one pair, of 500 indicated horse-power, are horizontal, and were likewise made by Messrs. Musgrove and Sons. The remaining pair are beam engines, and were built in Glasgow. The latter were for a long time the only pair of engines in the factory. Other eight boilers, similar in construction to those we have named, supply the two lesser pairs of engines, and these boilers are likewise fitted with Green's economisers, consisting of 356 pipes, by means of which the water is raised to a heat of 280°.

The process of thread making has nothing novel about it, and all who have been in either a cotton or a woollen factory will have a very good idea of how this very important product is manipulated. The yarn is procured from spinners, chiefly in the Lancashire districts. It is first wound on to large-sized bobbins, by means of a cob winding machine. All the subsequent processes are pretty much assimilated, and consist chiefly in twisting the yarns together. Two ply of yarn make a "single," and three singles make "six-cord thread," which is the kind chiefly used for domestic purposes. After the thread has been formed by thus twisting the yarns together, it is wound off the bobbins on to a large real, from which it is in turn taken and divided into "cuts," before being sent out to bleach. For bleaching purposes, Messrs. Coats have specially erected works at Nethercraig, about two miles from Ferguslee. Here they have acquired a large stretch of ground for drying purposes, and there is a plentiful supply of fine soft water, beyond the possibility of being contaminated by any other other manufacturing process. A great deal of care and expense have been bestowed on the fitting up of these works, so as to render the bleaching process as perfect as possible. Connected with these works the Messrs. Coats have also a large dye-house, for colouring the thread. After the thread has been returned from the dye works it undergoes the final process of being wound on spools. This description of work is chiefly done by hand on single-spindle machines. There have been recently added to the works, however, a number of self-acting machines, by the means of which eight spools can be filled at a time. This machine really takes in the empty spool, fills it with thread, stops when the full length has been wound, and finally, after making the nick in the end of the spool, puts the thread into it.

Messrs. J. and P. Coats have a department specially fitted up for the manufacture of spools or bobbins, and at the back of the timber yard they have a large woodyard, where the timber for the purpose is stored in large quantities. One of the machines used in spool making is the invention of one of the Messrs. Coats' late employees, who sold the patent to his masters. It remained in their hands for a number of years, but is now used at other factories of the same kind, the patent having expired. The Messrs. Coats have another thread factory, of large dimensions, in America, their large and increasing trade with the United States having induced them, some years since, to build premises for the supply of their American customers alone. They have also special agencies in every town of any size in the United Kingdom and on the Continent, the bulk of this trade being export. Altogether the firm employs upwards of 1800 hands, of whom the majority are girls. Their hours of labour are from 6 A.M. to 6 P.M., with two intervals of an hour each for meals; and as they are chiefly on piecework, the amount of their earnings is, of course, entirely dependent upon their own exertions. We may add that there is such a demand for the products of Ferguslee factory at the present time that double shifts require to be put on, the night shifts being altogether male operatives. One of the partners of the firm, Sir Peter Coats, was knighted a few years ago, for his gift of a free library and museum to the town of Paisley.

THE ENGINEERING TRADES OF GLASGOW.

SCOTLAND STREET SUGAR-MAKING MACHINERY.

Messrs. P. and W. M'Onie were the first engineering firm to commence the manufacture of sugar-making machinery in Scotland-street. Like most other works, at their commencement it had a very humble beginning, but it gradually extended, and became in course of time a pretty considerable engine-shop, as such shops went 20 or 25 years ago. After the lapse of about eight years Mr. Wm. M'Onie retired, and Mr. James B. Mirrlees became a partner with Mr. Peter M'Onie, the firm shortly afterwards becoming M'Onie and Mirrlees. For nearly three years the partnership continued, but owing to the lamented death of Mr. Peter M'Onie, a new managing partner, Mr. William Tait, entered the business in room of the deceased partner.

The business of W. and A. M'Onie began about 21 years ago, immediately opposite, in an engine-shop built by Mr. Myine, whose father was a well-known Professor of Moral Philosophy in the University of Glasgow (1797-1839). Since taking possesion of Mr. Myine's shop Messrs. M'Onie have extended the works very considerably along Scotland-street, and have also erected a large boiler shop on the east side of West-street. Their special business has been in sugar-mill work from the very first, and indeed they have hitherto done very little else. The sugar-mills made by Messrs. M'Onie vary greatly in size and power. Sometimes they are so small that they can be worked by a couple of bullocks; at other times they require steam-engines of upwards 100-horse power. The rollers, of which there are always three, vary from 10 inches to 36 inches in diameter, and up to 6 ft. in length. Messrs. M'Onie employ about 350 hands, and could easily employ more if they could only be got. The trade was never so busy before as it has been during the last 12 months, and as it is just now. The firm of whom we are speaking are quite overstocked with orders, among the last received being one which came to hand by telegraph within the last week or two from the East Indies, for no fewer than five sets of engines and sugar-mills. The last mill booked was No. 1170.

Owing to the great increase in their business, Messrs. M'Onie have been compelled to arrange for further extension of their works.

SCOTLAND STREET IRONWORKS.

The establishment which goes by the above name is situated on the south side of Scotland-street, closely adjoining the Glasgow and Paisley Joint Railway, and is, as many of our readers are aware, very conspicuous, owing so its great extent and proximity to the railway. It is not an ironwork in the ordinary sense of that term, but is really an engineering establishment, and the speciality of trade pursued in it is the same as that which Messrs. M'Onie carry on—namely, the manufacture of all the varied machinery required on sugar plantations, including mills and gearing, steam-engines and boilers, cane and megass carriers, sugar pans, vacuum pans, &c. It is now fully 20 years since the business was commenced which is carried on by the above-named firm. The original partners, as already indicated, were Messrs. Mirrlees and Tait. They took possession of this site in the year 1857, and actually commenced work in January, 1859. The works are very large, and are regarded as being almost a model of mechanical arrangement, and owing to this circumstance they have since been largely copied from by various engineering firms who had new works to build. They were designed and planned by Mr. Tait, and are an excellent illustration of the remarkable constructive powers of that gentleman. The principal building is 250 feet long by 100 feet wide and 40 feet high, in addition to which there are a very large and completely equipped smithy of about 30 hearths, a commodious boiler-shed, &c.; and there has also recently been added a very large fire-proof pattern-shop and pattern-store, with the most complete system of registering the patterns to be preserved that it has been our lot to see in the course of our inspections. Almost the whole of the work done in this establishment is shipped from the Clyde direct; and to such an extent is the sugar machinery manufacture carried on by the firm that they have to charter vessels annually for the direct and special transmission of their goods to their destination. Some of the sugar-mills sent out by the firm are of very great size, as the rollers alone

are sometimes 7 feet long and 36 up to 40 inches in diameter; and each mill requires three of these ponderous masses of iron.

In addition to their ordinary work of making sugar machinery, the firm have also lately executed with success the extensive pneumatic despatch apparatus required in the Glasgow Post Office on account of the postal telegraph system: and they have just completed a contract in duplicate in connection with Dublin Post Office. There are upwards of 700 people employed by the firm, including three young ladies, who are employed in the drawing office making and colouring tracings of finished drawings. This system of employing female labour by engineering firms began some three or four years ago—the first firm to adopt it being Messrs. Dubs and Co., of the Glasgow Locomotive Works. So far as we are aware, it has not yet been attempted by any other engineering firm in Glasgow. On the death of Mr. William Tait the firm was re-constituted by the accession of Mr. Watson, representative of the eminent firm of Platt Brothers, and it now bears the name employed at the head of this notice.

EGLINTON ENGINE-WORKS.

The Eglinton Engine-Works are on the south side of Cook-street, reaching from Dale-street all the way to West-street. They are of considerable extent, and have been much enlarged since the first portion was erected, about 16 years ago. Messrs. Smith's business originated in Paisley, were they were to some extent engaged in the sugar machinery trade upwards of 20 years ago. They still carry on that branch of trade, and in addition bridge-building, boiler-making, and general engineering. At first their sugar-mill connection was chiefly with the island of Mauritius, although now they also have a very large connection with the West Indies, the Philippine Islands, and other sugar-growing countries. On a recent occasion when we visited Messrs. Smith's works, we found six sugar-mills in hands, two of them of 40-horse power each, with rollers 6 ft. long and of 34 in. diameter, and each weighing when finished nearly 8 tons. At present about three-fourths of Messrs. Smith's business is in making sugar machinery. They had also six 4-feet powerful centrifugal machines in hands for the West Indies. These machines are worked by a patent appliance, which simplifies the connections or gearing, as it dispenses with the pulleys and straps which are usually employed. For working each machine there is a small engine, and the only connection required is a plain steam-pipe. In this branch of their business Messrs. Smith and Co. are constantly employed, and in it they do a large amount of work for other engineering firms. They have been engaged in the construction of iron bridges for about 16 years. Their first heavy bridge was the one in Bothwell-street, and their largest is a railway bridge over the River Earn, in Perthshire, and they have executed another one over the Clyde, both of them being of 750 feet in length, one of them in spans of about 60 feet, and the other in spans of about 80 feet, the latter being erected on iron cylinders of the same construction as those of the Union Railway bridge over the Clyde. Messrs. Smith and Co. have in hands a seven-girder bridge for carrying the road over the Caledonian Railway at Dalmarnock. They have also a bridge for an addition to that over Brougham-street, Greenock, carrying the Greenock and Ayrshire Railway, one of the girders of the new contract being 15 tons in weight. The same firm have just finished an extensive work for the Tharsis Sulphur and and Copper Company, at Huelva in Spain. It is an iron pier of 118 20-feet spans, with a pier-head 316 feet long and 54 feet wide, the whole carrying three lines of rails, and enabling ships to load on either side. The pier is raised on screw piles and iron girders, the weight of iron used being about 2500 tons, in addition to about 30,000 cubic feet of timber. Messrs. Smith and Co. do a great amount of boiler-making, for which they have a very large shop and complete appliances. The shop is 200 feet long by 51 feet 6 inches wide, and 40 feet high. The firm have in hands or lately made some seven or eight large multitubular boilers, constructed in accordance with the principle of Rowan and Horton's patent—embracing a simple method of getting in and fixing the steam tubes.

SCOTLAND STREET COPPER WORKS.

The business carried on by the above-named firm is a sort of necessary accompaniment of the sugar-machinery trade, and hence we may conclude that this is one reason why the works have been located in Scotland-street. Until about six years ago the works were on the north side of the Clyde. It is the general opinion amongst persons in Glasgow who ought to know that there is no similar establishment in the kingdom that can at all compare in extent and completeness with the Scotland-street Copper Works. Owing to the fact of their recent erection they have been designed with an amount of care and system that is quite admirable. One of the features of the works is the fact that no fewer than six steam-hammers are employed in working domes, and bottoms, and large surfaces of rumstills; and this is quite a peculiarity of the works. The firm are largely engaged in the manufacture of vacuum pans, Bour pans, Wetzel pans, taiches or open sugar pans, such as have been for many years made in Iron by the Carrron Company, the copper work for sugar refineries, breweries, and distilleries, and turkey red dyeworks, the copper work of a considerable number of large steam-ships being built on the Clyde and elsewhere, &c. Within the last few years the establishment has turned out about 50 of the well-known pot boilers, such as are used in Thomson's road steamers, and in the traction-engines made by agricultural engineers, and the firm also execute brass-work and gun-metal work on a large scale for engineers. It may be mentioned that, in addition to the brass and gun-metal sent out, the firm turn out about 1 ton of copper-work per day. Messrs. Blair, Campbell, and M'Lean employ about 200 workpeople.

SOUTH COBBINSHAW OIL WORKS.

These works, situate in the immediate vicinity of Cobbinshaw Roch, near Auchengray, have now attained considerable importance, there being twenty vertical and seventy-two horizontal retorts in active operation, with stills and other appliances for "once running" the oil and the preparation of sulphate of ammonia. The leases embrace about 600 acres of shale, coal, ironstone, and limestone, having railway communication by means of a special branch. To economise manual labour, an endless chain, 800 yards in length, is employed to bring the shale from the pit to a powerful crushing-machine at the works, and simultaneously to convey the spent shale to the tip-head. A second chain, of 2500 yards, is designed to bring in the produce from the coal mine; while a third will distribute the crushed shale and coal at the mouth of every retort and furnace. Though only fifteen months have elapse since the company broke ground, quite a colony has been formed, there being 48 houses fully occupied and several more in course of erection.

EXPLOSIONS OF GAS AT COLLIERIES—No. I.

SIR,—These alarming and terrific explosions still continue in spite of the spread of scientific knowledge—in spite of mine inspection Acts, and apparently every effort that can be made by owners, workmen, and agents. The late explosion, so far as we can gather from the accounts of it published, appears to have been one of the most terrific on record; it has, indeed, been what old pitmen call a "blast," which term we believe implies that the explosion extends to and up to the top of the shaft or shafts, finding vent there, as the charge does at the mouth of a monster cannon. As to the cause of the occurrence, we can only know that a large accumulation of gas has occurred, and that this gas has been ignited by some means, and whether the mine was worked with safety-lamps or open lights is not stated, but it is rather probable that the mine was worked with open lights, as we have the statement of an agent who had gone through the seam where the explosion occurred only a short time previous to the effect "that he could have taken a torch through the whole mine safely."

New mines, where the workings have only advanced to a limited extent, are generally held to be safer than old mines of large extent; but this is a mistake. In a new mine we are more liable to sudden discharges of gas (that is, to blowers) than in an old mine, and the constant discharge of gas is also generally greatest in new mines. The reason is obvious; when a mine is well developed, and drifts and headings drive out in all directions, the drainage of the gas is to a great extent effected. All the great explosions we recollect have occurred in comparatively new mines in this district, and all of them have occurred at open lights; of course, we only refer to those explosions we have had personal knowledge of.

A new mine, especially a thick seam, giving off gas freely, worked with open lights, and ventilated by a furnace, and *well ventilated*, contains within it all the elements of danger in the greatest possible perfection, for if there is a danger of explosion at the furnace it is in a mine of this kind, where few splits (if any) or divisions of the air have been made. Here I submit we have all the necessary elements for a very dreadful explosion. All that is required to bring it to this most undesirable consummation is a sudden discharge of gas from a blower sufficient to charge the column of air up to the explosion point, or an accumulation of gas in some corner at the top of the seam and the rise side of the workings, through the failure or knocking down of a door, or the occurrence of a fall, &c.

We are quite aware that the phantom *sufficient ventilation* is still pursued by many miners and mining agents; miners also refuse to work with safety-lamps; they insist on having "good and sufficient ventilation, so that they can work with open lamps and see to do their work." No doubt good ventilation is a most desirable and necessary thing; it is, indeed, indispensable in a fiery seam; and if the seam is a thick one the ventilating power must be enormous to produce sufficient ventilation; but we still contend that the only safe mode of working a fiery seam is by using locked safety-lamps exclusively. No doubt the Guibal Fan is the most powerful and safe mode of producing a sufficient ventilation, and by using such a fan, and working exclusively with safety-lamps, we avoid the greatest danger in working those seams; but, although this looks very well on paper, the question arises how this system is to be carried out?

So long as men are determined to work with open lights these great explosions will most certainly occur, but presuming that a mine is to be worked with locked safety-lamps, the question still arises, how is this hard and fast line to be rigidly carried out? And to this we are obliged to reply that it cannot really be fully carried out in any mine in the present state of mining science. In cases where faults are met with, and drifts are to be driven through the strata in order to reach the seam again, blasting cannot be avoided; but we do not lay much stress on those cases, as extra provision is always made in those cases, and especial caution observed, so that we need not apprehend much danger here. But when lamps are used, and yet blasting is allowed to go on in every working place, can this system really be relied upon? It is, in fact, a mongrel system, not at all likely to prevent or even reduce the number of these fearful explosions. In order to carry the system properly out blasting must be entirely prohibited, and when the coal is strong and hard some other means must be used to bring it down.

Now, as men are getting more scarce every day, machines for cutting coal must become a necessity, and the same machines may be, perhaps, applied to bring the coal down also, no doubt there is yet ample room for new discoveries in connection with those matters.

Newcastle, Sept. 19. M. E.

THE PATENT "PROTECTOR" COLLIERY LAMP.

SIR,—I have pleasure in sending you the following analyses of the Patent Protector Colliery Lamp and the Stephenson "Geordie" Oil Lamp, and shall feel obliged if you will insert them in next week's Journal.—*Mark-lane, Manchester, Sept.* 19. M. E. TEALE.

[COPY.]

Analysis of the Light of the Patent Protector Safety Lamp, and of Stephenson's Oil Lamp, or "Geordie":—

SPECTRUM OF PROTECTOR LAMP.

Rays.	Without gauze.		With gauze.
Red	100	Heat ray	90
Orange	100	Partial light and heat	85
Yellow	100	Light	80
Green	100	ditto	70
Blue	100	ditto	60
Indigo	100	Actinic	30
Violet	100	ditto	None.
	7)700=100		7)415=60

Thus, 70 per cent. of the light passes the gauze; and 15 per cent. of the actinic rays.

SPECTRUM OF THE "GEORDIE" LAMP.

Rays.	Without gauze.		With gauze.
Red	100	Heat	45
Orange	100	Subdued light	70
Yellow	100	Light	60
Green	100	ditto	45
Blue	100	Partly light	35
Indigo	100	Actinic	25
Violet	100	ditto	None.
	7)700=100		7)280=40

Thus, the oil lamp with gauze emits 50 per cent. of its light, and 12½ per cent. of its actinic rays.

RELATIVE POWERS OF BOTH LAMPS.

	Protector (with gauze).	Oil.
Red	100	45
Orange	100	85
Yellow	100	100
Green	100	50
Blue	100	45
Indigo	100	25
Violet	None.	None.
	7)600=86	7)350=50

The oil lamp gives off 30 per cent. less light, being a gain of light in favour of the Protector lamp of one-third more; the oil lamp gives off less than one-half the actinic rays.

REMARKS.—In addition to the foregoing observations, I found that the oil lamp gave a double line in the yellow ray, proving the presence of sodium, and, to some extent, an imperfect combustion, whilst the Protector gave an unbroken continuous spectrum throughout.

In testing with explosive gas (CH_2), I found the new lamp very sensitive—much more so than the oil lamp. The new lamp was immediately extinguished; the oil lamp made two or three spurts previously. THOS. HARRISON.

COAL-CUTTING MACHINERY.

SIR,—Referring to the paper read at the Midland Institute by Mr. Chambers, entitled "Firth's Improvements in Coal Cutting," an abridgement of which appeared in the *Mining Journal* of Sept. 9, and also to Mr. Leatham's letter on the same subject, which appeared in the Supplement to last week's Journal, I beg to offer a few remarks, having had *some* experience in the constructing of picks and points used for cutting coal, and which are *alleged* to have led to a successful coal-cutting machine, and to which both Mr. Firth and Mr. Leatham appears to lay claim to be the inventor. Mr. Leatham dates his claim from 1865; Mr. Firth from two patents, one in 1868, the other in 1869. Mr. Chambers, in his paper above referred to, says—"The idea of loose points had been started before, but no practical application of them." I suppose this to mean before the date of Mr. Firth's patents; but he does not say where the idea came from. Mr. Firth, in a letter to the *Mining Journal*, says—"attempts to make loose points dates eight or nine years back;" but, of course, not like his; a loose point is a *loose point*, and the difference between his and those made eight or nine years ago is in the fixing of the point to the shaft or stem of the pick, and Mr. Firth prefers a circular taper end and socket, with a cushion of India-rubber.

I am able to assert, without fear of contradiction, that loose or movable points, fitted into a square or rectangular socket, and secured there by cotters, curved or circular bent picks, picks formed with two right-angle bends in the stem, which were called "cranked picks," and exactly as shown at Fig. 2 in Mr. Firth's specification, No. 600, 1868, were all made and used at the West Ardsley Colliery, by Mr. Ridley and myself in 1862. Mr. Leatham had at this time occasion to come often to the colliery, and had the opportunity of frequently seeing them at work with the machine, which you make Mr. Chambers to say "had a substratum of excellence" about it. But what Mr. Chambers really did say in his paper was—"The original machine introduced at the West Ardsley Collieries was undoubtedly a good machine, and he should be sorry to say anything against those who were so far successful," but for some purpose or other he omitted to give the names of the inventors.

This imperfect original machine, which Mr. Firth calls his, was the first of its kind that had been made, and was *really* and *truly* the invention of Mr. Ridley and myself, and did in 1862, in the presence of several gentlemen, hole or undercut two banks, each 40 yards long, 3 feet deep, in 5 hours and 35 minutes, including the moving from bank to bank, and all other stoppages, for Mr. Firth was kind enough to give the man that worked the machine 1*l.* for doing the work so well.

I have carefully noticed the various alleged improvements so ably set forth by Mr. Chambers in his paper, but I cannot say, like him, they are better than I anticipated; but on the contrary, taking into consideration the state of the machine when it left our hands, the length of time that has since elapsed, and the large amount of money they have spent, I consider but little has been done by way of improvements. The double-headed pick, the tie-rods, the frame in one forging, and the india-rubber for the circular taper socket, are, according to Mr. Chambers's describing, all the alterations or recent improvements that have been done the last nine years.

Waterloo Main Colliery, Leeds, Sept. 20. J. ROTHERY.

COAL-CUTTING MACHINERY.

SIR,—Although I feel that "Courts of Law" are the proper places to decide patent rights, and although I should be glad of an opportunity of there proving the validity of my patents, yet the remarks of Mr. Leatham, in the Supplement to last week's Journal, are so unwarrantable that I am compelled to reply. A similar letter appeared in the *Mining Journal* of March 26, 1870, which you would oblige me by re-publishing, along with my answer, April 2, 1870.

The attempts to make loose points date as far back as eight or nine years ago, long before the date of Mr. Leatham's specification; some of these attempts we have in our possession. The manner in which mine are constructed differs in every particular from those of anyone else. Mr. Leatham claims "a *nose* or point, with a *wedge-shaped* socket to fit *on* the arm of the pick." I claim "a point put *into* a boss on the arm of the pick, having a *circular taper*, and cottered *against a cushion of india-rubber*."

Mr. Leatham's statement, that he is the original inventor of my "curved" pick, is entirely false, as it is neither specified nor even *hinted at* in his specification, No. 1203, 1865. The statement about the "false bottom" is too absurd to answer.

Mr. Leatham goes on to say, "I had hoped that when I came so successfully out of a prolonged lawsuit, less than twelve months ago, all the claims which I have here set forth would have been generously, not to say justly, admitted."

Mr. Leatham has had no lawsuit with me, as he would have you infer. I certainly am not *generous* enough to admit Mr. Leatham's right to any part of the machine which I represent, and I defy him to prove that we are indebted to him even for the strength or design of the simplest part.

I would not ask so much of your valuable space were it not that we are taking orders for the machines, and I should not wish such unfounded statements to remain unanswered, especially in your widely circulated Journal.—*Leeds, Sept.* 19. SAMUEL FIRTH.

[From the SUPPLEMENT to the Journal of March 26, 1870.]

MACHINE COAL-CUTTING PICKS.

SIR,—Will you be kind enough to allow me to call the attention of your readers to the last improvements of the pick, as given by Mr. Firth, in his patent, dated March, 1869, wherein he states—

It has hitherto been the custom to work picks with points solid—that is, the point and pick in one piece. This obliges the whole pick to be brought out of the pit to be sharpened whenever blunted. My (Firth's) improvement consists in making a boss on that part of the pick nearest the point, and movable cutters fitted in sockets, secured by cutters or keys.

In April, 1865, Mr. Leatham, in his specification, says—

The nose or point of the pick is made portable, and formed with a wedge-shaped socket, to fit on the arm of the pick, so as to be readily taken off to be sharpened, and another put on.

Mr. Rothery, in his patent of February, 1866, says—

I propose to make the point of the pick or cutter removable, and to secure it in its place by a dovetail and cotter, so that when damaged or required to be sharpened those points may be readily removed and replaced by fresh ones.

Besides these, I believe that movable cutters, fixed into sockets by cotters and keys, were made and used by Messrs. Ridley and Rothery more than seven years ago. Certainly they did not use any cushions, therefore the only novelty I can see is the india-rubber cushion.

AN OBSERVER.

[From the SUPPLEMENT to the Journal of April 2, 1870.]

MACHINE COAL-CUTTING PICKS.

SIR,—I am obliged to your correspondent, "An Observer," for giving me credit for some novelty, however small, in the fixing of my loose pick-points; and, assuming that there is no novelty in the idea of making the points removable, it seems to me that the question is whether those who use our pick machines will prefer to use my system, which is a proven success, or any other. I can only add that the title, "An Observer," is so suggestive that it would be fairer to me if your correspondent would sign his own name the next time he condescends to criticise any of my patents. SAMUEL FIRTH, M.A.

Leeds, March 29.

OUR COAL SUPPLY.

SIR,—I have a conscientious objection to croaking, and, so far as I can, I try to prevent others from indulging in anything like a frog chorus. The Report of the Royal Commission on the Coal Supply of the United Kingdom appears to me to have caused a good deal of unnecessary uneasiness, or, perhaps, the affectation of alarm. I have not read the report *in extenso*, but if the published abstracts are reliable, and I presume they are, the estimates are "little better than a gigantic puzzle." On all hands, however, it seems to be agreed that we have a stock of black diamonds at command large enough to satisfy the needs of reasonable beings. The arithmetical length of head of the unquestionably able Commissioners is evidently not uniform, although all of them use figures of almost astronomical extension. My friend, Robert Hunt, the prince of mineral statisticians, gives us the correctest facts of our coal output, &c., and, upon reflection, his figures travel nearly out of the reach of ordinary comprehension. It is a fact that coal makes iron and steam, and that steam and iron move the world; that our enormous output makes coalowners rich, ironmasters richer, steam millowners richer still, and our teeming population richer by far in the comforts, conveniences, and economies of life. It is a fact also that there is generally a sparse population wherever wood only has to be used as fuel, and, on the other hand, people huddle together in what is called the domestic circle wherever there are fire-place (well or ill constructed) for the burning of "brightly coal;" and, perhaps, it is in this circle on a cold night, that timid people get most funky in silly apprehensions lest their successors, unborn, should be devoid of such comforts. We are confidently told by everybody that we have a supply of coal for more than 100 years. None of us are likely to live so long—this is some consolation. Some calculators say we have enough for 1000 years, and, with chilling economy, for 2000 years.

Now, with all becoming respect for posteriety, do let us be thankful for present very extensive mercies. People once lived in health without coals, and doctors, too; perhaps they could again. Stow records that sea-coale was prohibited from being used in and near London, as being prejudicial to human health, and that even smiths were obliged to burn wood in 1273. In 1306 the gentry petitioned against its use. Coal was first made an article of trade from Newcastle to London in 1381. (Rymer.) Notwithstanding the many complaints against coal as a public nuisance, it was generally burnt in London in 1400; but it was not in common use even in Lancashire it is said, until about 1625. In 1700 the London consumption was only 317,000 chaldrons. When we had made nearly all our best coal into ships we took to iron. Our so-called extravagance in coal has made the country rich, and added greatly to the comfort of the world; and our savants say there is as much to be got as we have already had, so that when we, or others to come, have got that out of the earth's treasure-house, it is quite probable that posterity, about which we appear so anxious, may be able to fetch coal from other shores at freights less than the cost of winning it at home, and be better able to pay for it into the bargain. At the least, we ought in compliment posterity so far as to believe that they will be able to take care of themselves, if not more competent than ourselves. Besides a thousand things may happen. When the coal is exhausted here, posterity, or a lot of it, may have emigrated to other coal districts, or the climate (by internal heat) may have warmed up here; or posterity may have learned to do without domestic fires; and motive power may be generated in other ways, which is not at all improbable.

Besides, there may be many millions of billions of tons of coal in workable depths under the Permian, New Red Sandstone, and other superincumbent strata for ought we know. Sir Roderick Murchison's divergencies must not be allowed to ignore the opinions of other men fully as long-headed in these matters as he is. In this exalted guessing, perhaps, one guess is as good as another. It is enough for the present generation to know that there is plenty of coal in the natural cellars yet. In no article on our coal supply that I have seen has there been any allusion to what has all along appeared to me of the gravest importance in the consideration of the question—Whence is to come the supply of colliers to work our deep mines? It is not to be that colliers' sons will necessarily emulate their fathers, and follow their dirty underground occupation as heretofore, even if colliers' demand and get (as they assuredly will) increased wages. No other inducement can possibly arise but large wages; but should it so happen, what youth or age will be got to go underground if equal wage can be earned above ground, either in the open air or the close and stifling factory? Increased output implies also proportionate increased manual labour. Whence is it to come? People now-a-days know that the average duration of deep colliery life is not beyond threescore years and ten, and that deaths by accidents, albeit great the result of negligence, are over 1000 annually, so that it is out of the power of any interested painter to represent coal-pit life other than black paint, with here and there sad dabs of gory red. I do not write this in any croaky mood. I see nothing to croak about in it, but after perspiring at every pore a day or two ago on the Continent and reading your able article this morning by a fire at home, my thoughts took this direction.

In conclusion, I submit that we ought ourselves to be content with our lot, with coals at 11s. a ton at our own door; and as for posterity (not yet in embryo), when they may happen to appear on the stage long, very long, after we have quitted it, let us not for an instant suppose that they will lack brains any more than ourselves

rather let us imagine that if they may happen to stand in need of anything, and know where it is to be got, they will know how to get it, or to go without it.—*Manchester, Sept.* 18. T. A. R.

BORING BY MACHINERY.

SIR,—I never write anything in private or for public print that I would not like to put my name and address to, nor reply to any *anonymous* writers; I would, however, advise "Observer" before he writes again, especially for any public paper, to make himself acquainted with the *facts* of things, and not to take *all* the babblings of his Bacchanalian brothers for truth. WILLIAM WASLEY.

Fownog, near Mold, Sept. 21.

MINING IN CALIFORNIA—THE "COMSTOCK."

SIR,—The references made in the *Times* City Articles on the question of Californian mining, which have led to remarks upon the "Comstock" in particular, are not likely to be understood as they should be unless it be more clearly explained what the word "Comstock" implies. A casual reader would certainly take it for granted that it is a mine, whereas it is a lead or vein measuring nearly 19,000 ft., upon which large and small locations have been formed into many companies, a list of which are given in Mr. Raymond's publication of 1869—then numbering 43. Many of these companies may have done well, whilst others may not have been so fortunate. The half of Cheapside may be unlet, but that does not prevent the other half from being productive, and yet Cheapside, as a whole, might thus show no profit. If it be asserted that the Americans extracted twenty millions sterling in nine years without profit no one will believe such an assertion. It is quite possible for 15 of the companies on the Comstock lead to make ten millions in profits, whilst 20 others made no profit. This, however, should be explained. On reference to Mr. Raymond's work, wherein he refers to the Comstock ore falling off in quality upon getting into depth, he says (in 1869) that the waste heaps of 1864 were overhauled, and ores containing $40 a ton extracted, which in 1864 were cast aside as being then too poor, but that many a man was now ready to buy a clump of ore containing $15 to the ton (as shown by the mill).

I am not quoting these facts in order to increase our taste for taking to mines, but simply to show that you may be able to mine successfully in 1871 ores which five years ago were not to be handled with a profit, the conditions of that period being taken into consideration. One of the first questions always put when a mine is to be transplated to London is—"Why, if it is such a good thing, do they want to sell?" The answers may vary, but the honest one is, because you will pay them much more than they are likely to get anywhere else.

The Agua Fria was first offered to me, and when I asked the vendors how they offered me such a fine property as they stated it to be for so small a sum, they replied they had no money in America. Anyway, I had either the good luck or judgment to refuse to entertain the offer, and did not live to repent it. It was brought out by other people, and the vendors took part payment in shares, which they were to keep for a time, to show their earnest belief in the merits of the property; the directors, I presume, forgot to lock up the scrip, for the vendors sold the scrip at a large premium, and exported the bullion, but not one penny ever came to the shareholders—on the contrary, they subscribed many thousands more, only to be hopelessly flung into the abyss where went the first subscribed capital.

A long gap, and another mine is offered to my firm, and many are the sayings of the wiseacres. This mine is in the White Pine district, in Nevada, U.S.; it consists of chloride of silver. It is situate on Treasure Hill, and for the love of mining science I hope it will be watched. "Only a surface mine," says one; "only a pocket," says another. I like the word *only*, because we have added 300 ft. to the previous purchase of about 2000 ft., and we *only* gave 10,000*l.* for it, and there is just a chance that we may get all the 150,000*l.* out of it which we paid for the Eberhardt and Aurora Mines and the iceberg. The company's 10-stamp mill made 25,000*l. profit* in six months out of that 300-ft. purchase, and yet the 10-stamp mill costs at least $10 per ton more for milling than does the new 60-stamp mill lately started. If the Eberhardt and Aurora Mines (without the Ward Beecher) crush ores which produce $40 per ton, subject to $20 per ton for expenses for three years duration, it will not be a bad bargain for 150,000*l.*, as per following calculation:—280 working days in the year, at 100 tons per day, being worked by 30 stamps wet crushing and 30 dry=28,000 tons, which at $40 per ton produces £1,120,000. That for three years will give $3,360,000, or a gross sum of 672,000*l.*—$20 per ton being deducted for working expenses will leave a net profit in three years of 336,000*l.* I name three years because ore was reported upon and measured as in sight to cover that period of working time. Rely upon it mining in California depends upon three things—science applied on a large scale, facility of communicating with the district, and wages, which will, of course, vary, the second essential is more or less developed, because food and rent, &c., are affected accordingly.

I can cite illustrations showing what two years have accomplished. The "International" is a 60-stamp mill, and has cost the Eberhardt Company 50,000*l.* The Stanford mill, belonging to the South Aurora Company, is a 30-stamp only, and cost 37,000*l.*, and was built by the same people; the Standford, however, was built before the railway from San Francisco to Elko, which now saves 500 miles hauling by road, and so saved the Eberhardt Company a large outlay, an advantage showing a great saving. Again, two years ago wages were $5 a day, now $3·50. We now cast aside $20 ore (per ton) as they once did $40. Who will dare say we shall not find ourselves in a position some day to hail the position of $20 ore as we now do $40 ore? Who of your readers will limit the word *surface* before they have the advantage of seeing to what depth we mean to go in the Eberhardt?—*Burnham House.* FREDK. T. HAGGARD.

COMSTOCK MINES, NEVADA.

SIR,—Having seen in the *Times* of Sept. 15 a statement that the mines on this lode have not made any actual profits, I beg to hand you a list, taken from the *San Francisco Stock Report* of April 14 last, as follows:—

WASHOE MINES.

Companies.	Total assets levied.	Total dividends disbursed.	Total assets per share.	Total divs. per share.
Alpha Con.	$ 132,000	—	$ 22 00	—
American	52,200	—	4 50	—
Belcher	192.4 0	—	18 50	—
Bullion	1,077,500	—	215 50	—
Chollar Potosi	462,000	$ 2,492,000	16 50	$ 89 00
Confidence	218,880	78,000	140 00	50 00
Con. Virginia	127,600	—	11 00	—
Crown Point	623,370	858,000	51 94	71 50
Daney	436,000	56,000	54 50	7 00
Empire Mill	90,000	513,600	75 00	428 00
Exchequer	128,000	—	16 00	—
Flowery	12,000	—	1 00	—
Gold Hill Q.	35,000	41,250	70 00	82 50
Gould and Curry	561,600	3,826,800	117 00	797 25
Hale and Norcross	610,000	1,598,000	76 25	199 75
Imperial	450,000	1,067,500	112 50	266 87
Julia	106,200	—	10 62	—
Justice	—	—	—	—
Kentuck	70,000	1,252,000	35 00	626 00
Occidental	165,000	20,000	16 50	2 00
Ophir	1,064,000	1,394,400	63 33	82 97
Overman	632,688	—	49 42	—
Savage	468,000	4,288,000	29 25	268 00
Seg Belcher	180,800	—	28 25	—
Sierra Nevada	450,000	102,500	22 50	5 12
Succor M. and M.	—	—	—	—
Yellow Jacket	1,518,000	1,944,000	63 25	81 00
Total	$9,836,238	$19,402,050		

I consider the net sum very great when we consider the disadvantages. These properties were worked during the past 10 years, and frequently with borrowed capital, at 5 and 10 per cent. per month which is to-day the rate for money advanced to miners). These properties had the whole of their capital, machinery, and supplies sown from San Francisco, many hundred miles, over mountains as high as the Alps. What, may I ask, may be expected in the future from the mines of America, that are being worked at a nominal from 50 to 75 per cent. of the gross output of these mines should be profit. Immense experience has been gained, and there is now no distance from the seat of capital. The telegraph and railways have done their work, and the result is that almost every mine that is worked with English capital publishes the weekly returns in our city papers. H. H. ROCHE.

Palmerston-buildings, Old Broad-street, Sept. 21.

AMERICAN MINING ON THE PACIFIC COAST, AND THE MINING BUREAU OF CALIFORNIA.

SIR,—Thanking you for inserting my letter on the above most important subject in your influential Journal of Sept. 16, and as a further proof of the amount of appreciation of the respectability, &c. (and, therefore, its value as a mining authority), of the self-constituted Mining Bureau of California (more particularly as regards its President) at its head quarters, I would ask you to kindly insert the enclosed extract from the *San Francisco Chronicle* of June 5, 1870, which speaks for itself. H. H. ROCHE.

European and American Agency, Palmerston-buildings, Old Broad-street.

"AIDING AND ABETTING.—The course pursued by Judge Sawyer, of the Police Court, in imposing the tightest of fines upon persons found guilty of violating the law concerning lotteries, is meeting with its legitimate results. The city is being placarded with large coloured inked posters of the lottery scheme gotten up in Sacramento ostensibly for the benefit of the 'Emigrant Aid Societies of California,' under the general management of one 'J. Berton, Vice-Consul of France at Sacramento.' Tickets for the lottery are being hawked about, and the placards inform those who wish to invest in the illegal enterprise how they can procure chances. That this is a bold and open violation of the law will not be denied; and that the general manager, J. Berton, Vice-Consul of France at Sacramento, is amenable to the law, and ought to be punished, follows as a matter of course. To arrest the billposters who are guilty of aiding and abetting a violation of the law would not secure the result to be desired—the suppression of this as well as the other demoralising gift concert schemes whose circulars are flooding the State. A shrewd detective officer would not require much research to discover whether or not J. Berton, the manager, employed the billposters to placard the city; and a warrant placed in the hands of a policeman could be served at some appropriate time, and the 'general manager' be brought before Judge Sawyer. The prosecuting attorney has the right of appeal to the County Court, and Judge Stanly is not inclined to permit such violations of the law to go without adequate punishment. It is a disgrace to the law officers of Sacramento county that they should permit such open and flagrant setting of the law at defiance; it is a burning shame that such a journal as the Sacramento *Union* should be one of the very first to prostitute its columns by the publication of illegal advertisements. The longer these schemes are permitted to flourish in the State the greater will be the demoralisation. No sooner is one concluded than another springs up in its place. Unless the people are determined to set all law at defiance, they will see the impropriety of indorsing such enterprises. In this connection we desire to inform the readers of the *Chronicle* that 'J. Berton, Vice-Consul of France at Sacramento,' is not related to Francis Berton, Consul for Switzerland and Portugal in San Francisco. The latter gentleman has resided for many years in San Francisco, and is a citizen well known for his integrity and business enterprise. He is not interested in any illegal or doubtful scheme. We have indicated the means whereby the general manager of the Sacramento lottery may be made to feel the strong arm of the law. Will the proper authorities take note?"—*San Francisco Chronicle*, June 5, 1870.

ON IRISH AND FOREIGN MINES.

PADDY M'CARTHY AND HIS LANDLORD.

LANDLORD: Good morrow, Paddy; have you any news?—PADDY: Good morrow kindly, yer honour, and is it news yer honour is axing?

LANDLORD: Yes.—PADDY: Why thin I have news from my brother Con, who has bin in California this twinty years or more, that bates the world entirely, He says in his letter to me—"Paddy," says he, "I must tell ye all about the great republics. They are grand things for Ireland, and one of them will soon be sent over to the 'Ould Country;' for," says he, "the principal republics in *Europe* are Genevay, Holland, and *America*." And thin he goes on about the silver and goold mines in California, and, glory to goodness, yer honour, ye never heard the likes in yer born days.

LANDLORD: Well, Paddy, I am waiting to hear the particulars.—PADDY: Why, yer honour, I'm coming to it; but it's a mighty long story. He says, "Paddy," says he, "all the mines (or claims as he calls 'em) are divided by impintrable *furze ditches, made of quarried stone laid edgeways*, and when the claims are thus secured they makes holes in the ground, and dig out silver and goold galore." Och, murder! but Californy must be the greatest country in the world to live and die in. Con then says, "Paddy—Whisper; I'm going to tell ye a grate secret, and ye must not mention it to any mother's son in the whole universe, for," says he, "it would spoil the commerce." Still I'd not like to refuse yer honour anything, and it's this way they does it:—A few poor boys, like my brother Con, after they have made a few holes, sell their claims to the 'cute Yankees for a few dollars, and the Yankees thin put up cradles, &c. (wisha! what a quare place to put up cradles), for getting out the goold and silver. A committee is then formed, and deputayshuns sent to England with big chests of specymens. Thin grate companies are formed in London, with directors and larned philosophers, and the claims are bought of the Yankees for more money than all the ships in the world could hold. Glory to the blessed Vargin! but Californy mines bates this world or any other world. But Con got tired of digging holes and selling his claims for a few dollars. So he says to himself one day—"By jabbers, I'll have no more of the diggings and the Yankees getting all the profits." So, no sooner said than done, and off wid himself to Nevada, where he is now making an honest fortin by *hunting bears*—for he sells any quantity of *skins before the bears are caught*. Now, I'll jist tell yer honour how this *philandering and deludering* will end—It will end like Tim Flynn and Jerry Hagarty's partnership. Tim and Jerry bought a big *ram* for the sake of the *milk*. Tim milked, and Jerry held the pail, but the divil a pint could they get at all, at all.

LANDLORD: Really, Paddy, Con's letter gives a wonderful account of the Californian mines.—PADDY: Wonderful is it? You may say that; but its so true as there are no trees on the top of "Hungry Hill." And now, yer honour—and glory to ye and all yer ancestors dead and alive—might I be so bould as to axe your honour's rivirence a few questions?—LANDLORD: Certainly.

PADDY: Well, thin, what is the rayson that ye and the likes of yers don't work the rich mines in the "Ould Country?"—LANDLORD: It is much easier, Paddy, to ask than answer the question; and I may tell you, in a few words, that landlords, as a general rule, after providing for all charges on their property have no surplus funds to invest in any safe speculation, and the new landlords, under the "Encumbered Estates Court," do not appear to improve upon the old—["True for you," says Paddy]—but let me ask you, Paddy, have we evidence of good mines in Ireland?

PADDY: Holy Moses! The saints be praised! Did ever mortal man hear the likes of that? *Mille* murder! Evidence of good mines in Ireland? Am I dreaming, that I should live to see this day, and hear the likes of that about the "Ould Country?" The Lord save us! I am *ruinated* and disgraced for ever. Mines in Ireland! Did yer honour ever hear tell of the Wicklow Mines? Did they not teach your honour in Trinity College that Brian Born's goold jugs, and basons, and goblets were dug out of the Wicklow rivers millions of years before Californy was *invented*? Any poor National schoolboy could tell you this, and a dale more if he liked. Did ye ever hear tell of the mines of goold, silver, copper, lead, iron, barytes, and all other mines that man could mention, in Wicklow, Tipperary, Waterford, Cork, and Kerry? Do you know that you couldn't drink a cup of tay only for the chainey cups and saucers made out of barytes? Faith, ye must be mighty ignorant entirely if ye don't know all these things, and I make bould to say that ye could talk by the hour about "home rule"—cock ye up with it!—when ye don't know or care about the rale goold of the country. Evidence of mines in Ireland! Yerrah! I am *dazz ed* entirely with the idea. I could hear that Jerry Driscoll, the National schoolmaster, was reading the other night in the *Mining Journal* about *tin* in mundic. We have the rich mundic in the county Cork, and there is goold and silver in it, and sure there ought to be *tin* too. Mines in Ireland! By the powers, let the mines of this county be worked, and I'll go bail that they will bate the mines of Californy any day. But I see yer honour is getting offindid. I'll have no more *truck* with ye, or the likes of ye.—*County Cork, Sept.* 18. H.

MINING IN THE PACIFIC STATES.

The following communications have been addressed to the Editor of the *Times*:—

SIR,—Having been connected with metallic mining for 25 years in most parts of the world, I have marked with much interest your recent notices on the incipient mania for gold and silver mines on the Pacific coast, and I have been especially struck with the force and truth of the extracts from Mr. Rae's book which you have given in your column. I have no desire to discuss the individual merits of any particular mine. I simply write a few lines in justice to Mr. Rae to afford an unexceptional corroboration to what I take to be his general proposition,—that silver mining in Nevada has not hitherto been generally profitable, although the past local workers have had the cream of those properties which they are now crowding on the London market.

The first, and by far the greatest and richest, silver discovery made in Nevada was on the famous Comstock lode. This lode, vastly richer than that of the Potosi mountain or the Veta Madre of Guanjuato, has returned within a few years silver considerably exceeding $100,000,000 (20,000,000*l.*) in value; yet all this great return has been without profit—without profit, that is, to mine owners; for such a return of treasure, and the trade arising from it, has been, of course, an immense source of wealth to the States, and particularly to the city of San Francisco; and this applies *a fortiori* to the more recently-discovered districts in Eastern Nevada. In order that there may be no question about these facts, I append extracts from the reports of Messrs. Ross Browne and Rossiter W. Raymond, published by authority of the United States Government, and whose authors may, therefore, I hope, be not excepted to as irresponsible. It will be noticed that while Mr. Browne's remarks refer to the Comstock lode only, Mr. Raymond's (written subsequently) refer to the State of Nevada in general, instancing the Comstock lode as the most striking example. F. G. S.

September 13.

"The immense yield of bullion from the Comstock lode will lead one to suppose that the profits realised by the owners have been proportional to the yield, but this has not been the case. . . . We have no accurate figures for the earlier years, but comparing the dividends with the assessments (*Anglice*, calls) levied, we fine that the aggregate produce of the mines has been swallowed up in expenses."—*Ross Browne*, p. 387.

"One great cause of trouble is the fact that mining has not, on the whole, been profitable to individual adventurers. And of this fact the Comstock lode has furnished a striking example. Nearly $100,000,000 have been extracted from that one lode within the past nine years, yet the aggregate cost to the owners has been almost as much."—*Raymond*, p. 51.

A correspondent (Mr. H. H. Roche) calls in question the statement made in the letter signed "F. G. S.," that the Comstock silver mines, although they have yielded 20 million sterling in value, have no resulted in any net profit, and denies the correctness of the quotations given from the reports of Messrs. Ross Brown and R. W. Raymond. With regard to the latter, indeed, he does no believe "that any such passage exists in his report." Whatever may be Mr. Roche's opinion on these points, he will find by reference to the "United States Geological Explorations of the 40th Parallel," under Mr. Clarence King, the geologist in charge, definite statements regarding the experience of the past three years tending strongly to corroborate the assertions of "F. G. S.," and which are accompanied by a declaration that "the Comstock lode, judged by present appearances, would hold out but doubtful promise for the future if there were no hopes of greatly reducing the present costs of mining and milling."

The following, from an American correspondent, on the subject of the Comstock and other mines in Nevada and elsewhere, calls attention to certain conditions which may fairly be taken into account:—

SIR,—Your frequent notices of mining matters, and especially American mining matters, during the current year have attracted my very careful attention in common with that of all who are interested in mining affairs. It would be superfluous to urge the good they have accomplished in warning the public, and in keeping them upon the enquiry when so many undertakings and so various-hued have been, are, and will doubtless continue to be presented.

But, though thoroughly appreciating all that has been said condemnatory of the numerous fraudulent mining ventures placed before the English public, and approving heartily any measures taken to check these frauds, I think that some of your correspondents have themselves to a certain extent been led into the faults they so violently reprehend. I think they exaggerate.

In a letter dated September 13, and signed "F. G. S.," the writer takes the ground "that silver mining in Nevada has not hitherto been generally profitable," and adduces the Comstock Ledge as a striking example.

I have not the original figures before me, but taking those given, which are very meagre, being only and a very indefinite statement of income and outgo, we find that in nine years working the Comstock Ledge has produced 20,000,000*l.*, and that in the same time has cost the owners almost as much. This nine years, be it recollected, includes the whole time of work; it takes the ledge from its discovery, and carries it through the manipulations of stockbrokers and jobbers in New York and San Francisco; through the formation of companies with enormous share capitals to work bits of territory 90 feet in extent, like the Kentuck Mine; through times when labour was 20s., 25s., and 30s. a day for common miners, when machinery cost almost its weight in silver, from the fact that it had to be taken over mountains as high as the Alps, where the roads were to be built before the mines could be reached, and where every pound of powder, every inch of steel, all the plant and appurtenances of mining, and the very subsistence of the men and horses was subject to the same enormous loading of cost. This nine years takes the Comstock Ledge through its discovery, its purchase, its development, and its working, and still shows at the end a return of more than has been spent. The mines have paid for themselves, for their plant and working expenses, have yielded a certain profit, and the proprietors now have the mines and works still in hand and unencumbered; and this not with one company owning the whole ledge, with able management and strict economy, but with from 30 to 40 companies, owning from 90 ft. upwards, working in all sorts of ways, under all sorts of management, and under circumstances where I venture to say no mine of ordinary character would have been capable to be worked at all. The White Pine district, which was then a desert, uninhabited, hundreds of miles away from any human dwelling, approachable only through mountain defiles, and without one single appliance for labour, is now near the line of a railway from either ocean, filled with thriving towns, in hourly communication by telegraph with all the world, with mills and furnaces on the ground, and unlimited facilities for supplying all its needs. Suppose that these various mines upon the Comstock Ledge were now taken by a British company and consolidated into one, officered by British experience, and conducted with British care, it is not saying too much to say that shares in such a company would not only be at a premium, but would stay there. Such are the circumstances under which even the best mines must be worked to make them steadily profitable, but it is under such circumstances that hardly one mine in all the Rocky Mountain region has been tried.

I will only add that I have no pecuniary interest in Nevada, but the general reasoning applied to Nevada is applicable to all American, or rather all Rocky Mountain, mines, and I have thought it but just to afford a glimpse at the other side. If silver mining in Nevada has not hitherto been generally profitable, that State presents, indeed, a striking example of the inscrutability of human affairs; for a number of thousands of people have gone there, have staid there, and have grown rich in a period little longer than an English apprenticeship, and they found nothing there but mines, they have had nothing there but mines, and they have nothing there now but mines. FRANCIS HALSEY WIGFALL.

12, *Wyndham-place, Bryanston-square, Sept.* 16.

UNDEVELOPED MINING DISTRICTS.

SIR,—Having seen in the Supplement to last week's Journal a letter from Mr. R. Symons respecting "Neglected Districts," and also a few remarks on the proposed working of the Golden United Mines, I beg leave of a space in your next for the following, as I am particularly desirous to see some movement made for exploring this long-neglected district, and the north cliffs of the county of Cornwall generally, knowing there are many valuable mineral deposits here neglected, simply because they are not at present in what is called a mining district, but which I am confident will become, at no very distant period, one of if not the principal mining district in our county, at least for silver-lead ores. Some two or three weeks ago I had the pleasure of going over the sett of the Golden United, and dialling the workings now about to be resumed, and allow me to add I feel confident that success will attend any company working these mines in a proper and miner-like manner, which I am sure will be carried out to the letter by the parties now bringing them before the public.

The piece of ground the subject of the following remarks is in the parish of Perranzabuloe, Cornwall, and is bounded on the south by an elvan running east and west, and on the north by a large cross-course, which, dividing Carter's Rock, passes east through the breadth of the sett, and it is between these two that the western or Wheal Golden lode was so productive both in Wheal Golden and Lomax Mines. In this sett are two principal parallel lodes, strikingly similar in character, subject to the same influences, and having similar points of intersection—the one has been extensively worked upon in Wheal Golden and Lomax, and in both mines proved a very productive lode; the other, which I think is the master or champion lode, stands in whole ground, or nearly so, the only workings being an adit driven a few fathoms from the cliff at high-water mark, on the course of it south. The lode, however, throughout the drivage presents a fine appearance; in many places are good stones of lead, and others would work on tribute. In a map published by my brother in 1869 Wheal Golden and East Golden lodes are taken in as a part of the Chiverton district, but this portion of it possess features peculiar to itself, the lodes being strongly defined, and showing every indication of productiveness in depth.

I think the same successful results that attended the working of the western or Wheal Golden lode will be met with in the working of the eastern or East Golden lode, and that the one will serve to illustrate the other, and I know of no fairer ground (so far as the nature of mining calculations will admit) on which to estimate the value of East Golden lode in this sett as a mining speculation than by a reference to the old mine, which has been, and now is if worked, a good mine.

I have during the last 10 or 12 years surveyed, dialled, and laid down the lodes in nearly all the mines in the Chiverton district, and perhaps few have had the opportunities of observing and studying the district that I have, but in none of the mines have I seen a lode that pleases me better than the one now about to be worked on in the sett of the Golden United Mines. WILLIAM BRENTON.

Redruth, Cornwall, Sept. 20.

EAST LLANGYNOG SILVER-LEAD MINE.

SIR,—According to Williams, a famous gash, or chasm vein, was worked at Llangynog, in Wales, in the Duke of Powis's time, whose property it was. Llangynog was, perhaps, the richest vein of lead ore for the time it lasted of any yet discovered in this island. They had there a solid rib for a considerable time, 5 yards wide, of clean ore in the middle of the vein, which was poured out of the kibbles at the shaft-head into the wagons, and carried directly to the smelting-house without being touched by the washers and dressers of ore, besides several feet upon the sides of the vein, which was mixed with spar and other stony matter, and went through the hands of the washers. This rich and noble vein was at once cut out below by a bed of black "schistus," or "shiver," or "plate," and that so entirely that there was not the least fissure or vestige of the vein remaining, nor could any ever be found afterwards, although diligent search was made by the most skilful miners for several years, and at several times. The foregoing remarks I have culled from "Forster's" work, published half a century ago. There is no reason why other deposits of lead should not be found in the same locality under similar geological conditions. But I cannot see what there is in the published reports of East Llangynog to justify the enormous price of 150,000*l.*, which is asked for the mine. DEVONIENSIS.

Sept. 19.

CHIVERTON MOOR, AND ITS MANAGEMENT.

SIR,—I have read with considerable interest a correspondence which has taken place in the Journal relative to the management of Chiverton Moor. A "Shareholder" and a "Constant Reader" seem both to consider that the management is bad, although they differ in their views as to whether it is desirable that the management should be local or otherwise. The correspondence has elicited, however, from the secretaries the reason why the management of North Roskear was removed from London to Cornwall—that the purser was trying to get the whole control of the mine into his hands and into those of his friends. Now, I quite agree with "Shareholder" when he states that if the secretary and committee did their duty we should not find the mine in its present state. If the secretary had reported the jobbing that was going on in North Roskear, and if the directors had done their duty to the shareholders, it would not have been found necessary to alter the entire management to restore confidence in the concern. How do we know that the same secretaries may not be equally remiss in their enquiries about the same management of Chiverton Moor? At any rate,

I trust that the next meeting of the shareholders will be made special, to thoroughly look into the accounts, and to make any alteration that may then be considered necessary for the good of the shareholders, and not allow the concern through mismanagement to drift into the same state that was allowed in Wheal Ludcott and Wrey some time back, and which brought such discredit upon mining and loss to its shareholders.—*Sept.* 19. SHAREHOLDER NO. 2.

TERRAS TIN MINING COMPANY.

SIR,—We have received a great many letters respecting this property, requesting our opinion of the annual report, the probable amount of dividends likely to be declared, and whether we recommend the shares as a desirable investment.

We have carefully studied the report of the general meeting, which appeared in the *Mining Journal*, and we are compelled to confess that we are utterly unable to form any opinion whatever. The agent's report is in one respect essentially peculiar—that no money value is placed upon any point in the mine, but general terms are applied, such as "the lode has been invariably rich," "has produced some excellent tinstuff;" "the yield of tin was fair, and the ground excellent;" "almost any reasonable quantity of stuff can be obtained;" but in no instance is any statement made from which the reader could form the slightest estimate of the probable balance of profit over loss, or *vice versa*, upon the three months' working. A considerable amount of work appears to have been accomplished, but is obvious that to drive "upwards of 160 fms. of levels, construct 140 fms. of tramway, erect a patent stone-breaker, an excellent 12-horse power engine for driving the same, a powerful 50-inch cylinder engine, all the necessary buildings, greatly extending the tin dressing department, and the employment of a large labour force, must necessitate a very considerable amount of monthly expenditure.

From the absence of details contained in the report published in your columns, especially as the statement of accounts is omitted, it is impossible for us to compute the dividends in future. We, therefore, appeal to the managing director to save us much unnecessary correspondence by furnishing a few facts which will enable the public to form an estimate of the value of the mine—1. What was the amount of working capital?—2. What is the amount of cost which has been incurred since the present company was first started, and what is the amount which the sales of tin up to this time have realised? When these three simple questions are answered an estimate may be made of the future profits, but we think that all must agree with us that such an absence of material data is only calculated to mislead your readers. W. MARLBOROUGH AND CO.

Bishopsgate-street Within, Sept. 21.

MINING IN CARDIGANSHIRE—MYNYDDGORDDU.

SIR,—In the Supplement to last week's Journal you were kind enough to publish the remarks I made relative to this property, which has hitherto been little known generally, and locally only as being an extraordinary discovery of lead—also as involving a legal and equitable question as to the right of ownership, which has happily been determined. I stated that the lode (a most powerful one), which may well be the "Champion" lode of the county, may be traced for upwards of 14 miles, and is the same which has produced such immense riches for ages at the celebrated Hafon and Henfiwch Mines eastward, while I am fully aware that the produce of a lode at one point, miles away, does not necessarily guarantee an equal yield at all points, from the fact (according to my theory) that mineral wealth in any, nay every, locality is due to the elements originally present in the bounding rock, acted upon by a natural agency, of which we see the result, but cannot comprehend the *modus operandi;* and hence where the mineral is found deposited immediately present must be the elements of its constitution, while the magnitude of the lode and its continuation is quite another matter.

Well, Sir, pardon this digression, while I turn again to the old mines of Hafon and Henfiwch. From the year 1600 to the present time there has been yielded funds from this same lode, to the enterprising requirements of the celebrated Sir Hugh Myddelton, to supply water to London, &c.; while in the troublesome times of Charles we read of the equally celebrated Thomas Bushell being able from the rich yield of the same lode not only to clothe and support the army of Charles, but to support at his own cost a regiment of horse, and for the support of the royal cause generally contributed the enormous sum (in those days) of 50,000*l.*

Again we read of Sir Humphrey Mackworth having mined this same lode, and to have made immense profits to the year 1700. For the subsequent 90 years little is recorded of working the vein, but in 1790 we find active operations were carried on on this same vein by a celebrated mineralogist, a Mr. Shildon, who during his operations discovered at the Henfiwch Mine a monster shoad, or boulder of solid ore, containing 40 tons of lead.

The above remarks will show the magnitude and importance of this lode in the only mine of importance in which it has been laid open, while at the point in question (Mynyddgorddu) there is an outcrop of lead ore which seems at once to astonish the spectator, and to offer the surest guarantee of immense riches stored for the fortunate possessors. With your permission, I will re-ume this subject at a future time.—*Aberystwith, Sept.* 19. OBSERVER.

MINING IN CARDIGANSHIRE.

WEST ESGAIR LLE.—This mine has been very prominent before the public during the last few months, and great things have been promised on the completion of the water-wheel, which is now being erected. In the Supplement to last week's Journal a correspondent speaks of the great similarity existing between this and the Frongoch lode, which is now returning 300 tons of lead ore per month. Now, I am familiar with each of the mines in question, as well as most of all others in Cardiganshire, and regret to say that I must object to this assertion. Frongoch is not returning 300 tons of lead ore (or any other mineral) per month, the returns being about 120 tons, and I do not hesitate to say that even this quantity is more than will be returned in West Esgair Lee up to the end of 1872.

About 18 months ago the Nanteos Consols was shown forth to be a most valuable property, and at a more recent date the Cardigan Bay Consols. At each of these mines great things were promised on the completion of the machinery. Now, what is the result? The former is well known in this locality, and an advertisement in last week's Journal speaks of the latter, which is now under liquidation.

It is not my intention to trouble you with a long epistle on the present occasion relative to the West Esgair Lle Mine. The water-wheel will be completed in a few days, and the crusher with other requisite appliances will soon follow, and their having (as report says) 200 tons of orestuff, worth 10*l.* per ton, at the levels' mouth, and all the stuff breaking at the present being added to the pile, I should say that no difficulty existed in West Esgair Lle coming forward with its first 50 tons of ore at an early day. But mark the sequel. OBSERVER.

Devil's Bridge, near Aberystwith, Sept. 19.

[For remainder of Original Correspondence see to-day's Journal.]

FOREIGN MINING AND METALLURGY.

There is not much news to communicate this week with respect to the French coal trade. M. Danelle Bernardin, vice-president of the council of administration of the line from Vassy to St. Dizier, has addressed himself to the Northern of France Railway Company in order to indicate the embarrassments occasioned to industrials in the Haute-Marne by the insufficient supplies of rolling stock. The company has replied in effect that it is doing its best to remedy the difficulties of the moment, and some improvement in the state of affairs is said to have been witnessed during the last few days. The Loire Mines Company will pay, Oct. 16, a first dividend, of 3s. 4d. per share.

French charcoal-made iron has been in good demand, at 9*l.* 16s. to 10*l.* per ton. Ordinary descriptions of iron are maintained at 8*l.* 12s. to 8*l.* 16s. per ton, in warehouse at the works. MM. Jahiet, Gorand, Lamotte, and Co., of Ottange, have announced to their clients that the annexation of Alsace and Lorraine to Germany has compelled them to interrupt, to their great regret, the relations which they had long maintained with them. All the products of Alsace and Lorraine are now submitted to import duties on entering France; hence the announcement of MM. Jahiet, Gorand, Lamotte, and Co. The new protectionist system which M. Thiers and his colleagues have inaugurated was loudly called for by the industrials of the North and East of France, and it had been already applied by Prussia to French products; it is, nevertheless, rather freely discussed. A rude and unforeseen blow has been struck, it is contended, at a district intimately associated by old ties of friendship and consanguinity with France. The blow does not appear, however, so serious after all, as if the French markets are now virtually closed to the industrials of Alsace and Lorraine, those of Germany have been opened to them; and that this compensation will prove a considerable one may be inferred from the fears which the annexation has occasioned among German forgemasters. Charcoal-made pig, in warehouse at the works, has made 4*l.* 16s. to 5*l.* per ton; mixed ditto, 4*l.* to 4*l.* 4s. per ton; merchants' iron, 10*l.* 4s. to 10*l.* 16s.; and fine-grained iron, 12*l.* to 12*l.* 4s. per ton. A strike has taken place among the working ironfounders of the Cateau district, in the French department of the Nord.

Several forgemasters of Westphalia have addressed a circular to their clients, to announce that they have been compelled to make an advance in their products as from Sept. 1. They justify the advance by reference to the high price of coal, the continually increasing price of rough iron, and the advance in the wages of labour. A further advance in the price of rough iron in Westphalia is also said to be imminent.

There has not been much doing in Chilian copper at Havre, in consequence of the high pretensions of holders, who stand out for 71*l.* 4s. to 72*l.* per ton for first marks in bars, and 70*l.* per ton for current marks from the same source. The official quotations indicate the following prices:—Chilian and Peruvian in bars, 69*l.* 8s. to 70*l.*; refined ditto in ingots, 77*l.* to 80*l.*; pure Peruvian minerals, 71*l.* to 72*l.*; United States (Baltimore), 76*l.* to 78*l.*; ditto Lake Superior, 80*l.* to 86*l.* The two last qualities make default, and prices are only nominal. At Marseilles, Spanish copper has made 72*l.*; refined Chilian and Peruvian, 74*l.*; rolled red copper in sheets, 80*l.*; ditto in rounds, 84*l.* per ton. The German copper markets present a satisfactory aspect. On the French markets there is not much passing in tin. Upon the German tin markets there has been a certain reaction, and prices have been sustained with difficulty. Upon the Dutch tin markets Banca has made 79½ fls., and Billiton 78 fls.; transactions have presented no great importance. At Havre soft Spanish, first fusion, lead has been dealt in at 18*l.* 16s. to 18*l.* 18s.; lead from other sources makes default. At Marseilles lead in saumons, first fusion, has made 70*l.* 6s.; ditto, second fusion, 77*l.*; lead in shot, 20*l.* 8s.; rolled and in pipes, 20*l.* per ton. In Germany there has been a fair current of transactions in lead. At Rotterdam, Stolberg and Eschweiler has made 11 fls.; and German of various marks, 10¾ fls. per ton At Marseilles zinc in plates re-cast has made 17*l.* 16s.; and rolled zinc, 28*l.* per ton, with a discount of 3 per cent. At Hamburg zinc has been comparatively neglected.

The Belgian iron trade continues active, and the general state of affairs would be excellent but for the tendency to strikes, which every day becomes more decided. Casting pig is quoted at 3*l.* 14s. to 4*l.* 2s. per ton, rails at 7*l.* to 7*l.* 4s. per ton. The demand for merchants' iron continues good. The construction workshops have lost nothing of the activity previously reported as prevailing in them. The Belgian General Railways Working Company has just obtained for its Nivelle works a contract for the construction of 450 coal wagons for the Austrian Imperial State railways. On all hands there are rumours as to contracts being in course of negociation. Germany is stated to have ordered more than 10,000 trucks during the last six months. The Western of France Railway Company has been authorised to devote more than 137,400*l.* to the acquisition of plant; and the Northern of France Railway Company is to expend 49,715*l.* for the same object. The Belgian State system will also, no doubt, be compelled to yield to the incessant complaints of industrials, and increase its rolling stock. The La Croyère Rolling Mill will be shortly put in activity; it has just been purchased for 11,040*l.*, by a new company, in which the principal shareholders are M. Theobald Haron and M. Victor Piérard, who will be the director.

Coal freights have risen from Belgium for Paris to 10s. 6d. per ton. The supply of rolling stock still leaves something to be desired, but the complaints made on this head are less general than they were a week since. The number of boats available for the conveyance of coal is also increasing, but the orders received are so numerous, and the accumulated stocks are so considerable, that some time will probably elapse before the transport question is finally adjusted. Prices continue firm, and even display a slight upward tendency. The Belgian Minister of Public Works has promised to place upon the Belgian State Railways, with as little delay as possible, 420 coal trucks of 10 tons each, and 204 trucks of 10 tons for rails.

FOREIGN MINES.

The Linares Lead Mining Company (Limited) have declared a dividend of 5s. per share; the Fortuna Company (Limited) a dividend of 2s. per share; and the Alamillos Company (Limited) a dividend of 1s. 3d. per share.

ST. JOHN DEL REY.—Morro Velho, Aug. 17: Morro Velho produce for July, 11,565 oltas., from 4808 tons of ore; yield, 2·389 oits. per ton. Morro Velho cost for July, 4824*l.*; loss for July, 213*l.* Morro Velho produce, eight days of August, 2899 oits.; yield, 2·230 oits. per ton—112 tons of stone of a very mixed character were stamped at the Gaia stamping mill during August, producing about ¾ olt. per ton. The sinking in the new shafts for 15 days of August was within a few inches of 2 fms. in each shaft.

DON PEDRO.—The produce for July amounts to 15,717 oitavas (1813 ozs. troy), 6679*l.* 14s. 6d.; cost, 3647*l.* 11s. 6d.: profit, 3032*l.* 3s. Operations have been carried on with regularity and success; lode excavated from different sections above the average in auriferous quality. The produce exceeds that of last month by 1·303 oits., enabling a good profit to be declared. Encouraging samples have been taken from the 25, proving that the lode in depth maintains its auriferous quality, as also from a body of lode gone through in driving adit straight level; in all probability No. 8. Attendance of force has been very good. Canoa, Alice's west, and No. 6, rising from old sump, have each given boxwork. Line in curve has not been worked. Rarely has Maquine looked better or more promising for a continuance of remunerative returns. For the first division of August the advices state that the remittance is 31,285 oits. Produce weighed to date, 5980 oits. Operations at the mines have been carried on successfully, and the work excavated has been of good quality. In driving the 25 a rich line of gold has been gone through, a miner's hat of stuff yielding about 300 oits. This line from the 25, rising to the present bottom of stoping ground, should, if it holds its own, give a large quantity of gold. The pieces of gold are the largest seen taken out for a very long period, as will be seen when the next remittance reaches England. There is nothing of importance to comment on at the other sections.

ANGLO-BRAZILIAN.—The produce for July amounts to 450 oits. (51 ozs. troy). Total cost, including that at Pitangue, 1349*l.* 17s. 10d. Works for developing the Pitangue property have been carried on with vigour, and a large quantity of materials forwarded from Passagem, and adequate force in attendance. At Hoskin's level 9 fms. 4 ft. have been driven; better duty would have been accomplished but the ground changed in the end from sandstone to soft clay-slate, necessitating timber. Assistance has been rendered from Morrode, St. Anna, to tunnel this unexpected channel. The works for attaining the bottom of Fco. Antonio's Mine have been pressed forward. The ground in the adit level has been hard and quartzose. Extensive repairs have been made to buildings, axle tree for stamps has been purchased, and arms, rings, and ironwork for wheel sent from Passagem. About 900 fms. of rego will have to be cut to bring water on the stamps. Ratification of title deeds has not yet taken place.—Passagem: No improvement has taken place in the yield of the Fundao stone, nor any signs of the Viera met with. For the first division of August it is reported that the remittance amounts to 1086 oits. Nothing new to advise.

GENERAL BRAZILIAN.—Good progress has been made in driving the adits, sinking the engine-shafts, and erecting stamping mills. The force is sufficient and supplies ample; in short, all matters are as satisfactory as they can be in the absense of produce, and the latter further on will also be satisfactory. At St. Anna the old adit has reached seemingly the western extremity of the old workings, but no water of any amount has been met with. The driving now will be directed for exploring new ground, as referred to in the last report. At Itabira the shallow adit is advancing satisfactorily. The air shaft, No. 6, has been communicated, and 4 fms. 1 ft. driven in the adit. We have 57 fms. more to drive to reach Moore's shaft, and this probably will be accomplished in five months. The end is now penetrating a bar of stiff clay, and a little water is oozing through its joints. Inside the said bar the main lode may be struck, and the auriferous jacotinga already driven through may have reference to the same, but all the known shoots of gold are near and north of Moore's shaft, so the adit will be in new ground till it gets near the latter shaft. Nothing new in the middle adit calling for remark in this place. Moore's shaft is proceeding fairly, and the hand windlass has been superseded by a horse-whim.—Explorations: We are still without discovery of any importance in new ground. The clearing, repairing, and enlarging of the St. Anna water-course has been resumed, and good progress made. The surface operations have proceeded well. The stamping mill at St. Anna will be ready in about two months, and that at Itabira in about three months more. For the first division of August it is reported that the operations generally are progressing satisfactorily. At Itabira the shallow adit has passed the bar of stiff clay alluded to in the last month's report. The end is jacotinga, and water has increased a little. At the middle adit the tramroad has been laid down, and driving of end resumed. Moore's shaft is progressing satisfactorily. Explorations have been carefully attended to. The weather is fine, and surface works have advanced apace. Materials and provisions plentiful. Force adequate, and the health of the establishment good.

ROSSA GRANDE.—The produce for July amounts to 640 oits.; total cost, 836*l.* 15s. 10d. At Bahu Mine the sinking of the sump-shaft, as well as all work connected with the pumping machinery, is progressing very satisfactorily. The latter will be completed in September next. At Cachoeira Mine the lode has now undergone a fair trial, and its auriferous quality proved of a higher standard than expected; it produced the gratifying result of 7·8 oits. per ton—82 tons of stone have been treated, and yielded 640 oits. The driving of the adit level has been resumed. For the first division of August the advices state that the remittance by the Don Pedro troop had been forwarded for transmission to the agents in Rio—a box containing 640 oits. of gold dust. In the mine department there is nothing new to communicate. The operations at the various sections are progressing with regularity, and native attendance coming in fairly.

UTAH.—Capt. Nancarrow writes—Furnace working successfully. Will soon have the 50-ton furnace running. Ore enough in sight to run any number of furnaces.

TAQUARIL (Gold).—Mr. T. S. Treloar reports for July that explorations have been carried on vigorously day and night, but he is unable to report the discovery of anything new. Every point of any promise on the property is receiving attention, and though results so far have not been encouraging, they are still led to hope that by perseverance matters will sooner or later mend. Everyone here is doing his utmost for the interest of the company. Prosperity of the undertaking is the one and only aim in view, and the directors may rest assured that the best is being done for attainment of same. The produce amounts to 406 oits., and has been obtained from 685 tons of stuff derived from various localities, thus giving an average yield of ·592 oits. per ton. A portion of the manganese formation adjoining the stamping mill has been passed through the stamps this month, and separations have been made of several parcels of mineral from the deep adit, Piaga d'Agua, workings on summit of hill eastward, and Ponte Grande jacotinga, but with no favourable results. A small line was encountered in the early part of the month in the 21 westward upon top lode, and some fair work for the stamps was extracted therefrom, but the improvement was not sustained in descending. A cross-cut northward will be commenced next month from horizon of bottom of old engine-shaft, to explore other formations which are running parallel to the present two. These formations have been intersected at the shallow adit east, but at that point they are not auriferous. For the first division of August it is reported that since the last letter all points at Ponte Grande and hill eastward, which have received fair trial and proved non-auriferous, have been suspended, and the hands dispensed with. They have, however, extensive explorations still in progress, both in the old mine and at surface. The stamping mill is kept supplied with stuff coming from the former and manganese formation before alluded to, but the produce to date is without change for the better.

SWEETLAND CREEK.—Telegram: We have cleaned up, after 46 days washing, $20,000; paid taxes for the year and stores, $7500; for work on tunnel, $1100; and remit $6000.

EXCHEQUER (Gold and Silver).—L. Chalmers, Bullions, Aug. 21: The stope in the south drift from the 140 ft. level produced last week 6 tons of good ore; and the rise and stope from the upper tunnel 5½ tons, also good ore. I am not yet up to the rich shoot in the lower stope. Mr. M., who visited and inspected the mine last week, was highly pleased with our ore. The pay vein in the upper stope is widening out and increasing in value.

FOREST (Silver).—A report has been received from Mr. Edward Gledhill, the mining engineer appointed by the directors of the Forest Silver Mines Company to examine and report upon their mines in Alpine county, California. Mr. Gledhill reports that the main lode is from 100 to 200 ft. in width, and the yield is from $70 to $500 per ton. Mr. Gledhill is expected home by Oct. 1, when further particulars will be given.

EBERHARDT AND AURORA.—The directors received on Thursday 23 bars, valued at 5300*l.*

SOUTH AURORA (Silver).—The general manager writes from Hamilton, Nevada, August 26:—"The mill is running steadily on Ward Beecher ore; the ore is tougher than we thought, but notwithstanding we are crushing 47 tons daily. No change in South Aurora. We continue prospecting, hoping soon to strike a new body of pay ore. In the Iceberg and Snowdrop we are getting pretty good ore, but not yet a great abundance. The chances are fair in both claims for a good quantity."—Telegram received on Wednesday:—"Started mill today on South Aurora ore; 2000 tons on hand, mostly dressed; sinking on mine rapidly; no change."

PACIFIC.—The directors have received the following report from H. Prideaux, their agent at Lander-hill: "We have milled at the Manhattan Company's mill about 54 tons of ore. The bars of silver from this ore will be forwarded as soon as possible. We now have on hand ready for the Pacific Company's Mettacorn mill 50 tons of second-class ore, which will be sent there in a few days. The dump is being overhauled, and the pay ore selected for the even Company's mill. I am pushing the rise at the 550 feet level, and sinking the sump winze at the 400 feet level with all possible speed. I hope to make this connection in ten days, after which we shall commence stoping the body of ore cut in the rise. The ledge in the north cross-cut is looking well here; we are driving two levels, and as soon as convenient we shall commence stoping the backs. The stopes are yielding a quantity of rich ore."

BRAGANZA (Gold).—Capt. Roberts reports for July: A Deep Adit has been driven south 3 fms. 1 ft. 5 in.: total, 5 fms. 5 ft. 9 in. on No. 3 lode.—B Cross-cut has been driven 5 ft. The vein is 2 ft. big, and continues a very congenial looking lode; samples show gold. I am of opinion this will prove to be the same lode as our stope is on above, belonging to No. 1 lode.—C Cross-cut: We have stoped 5 cubical fathoms in the bottom of this level, on No. 1 lode; it still maintains its size and kindly appearance.—D Cross-cut: Risen 6 fms. 1 ft. 6 in.: total, 90 fms. 4 ft. 6 in., and driven to hole 4 fms. This rise proves not to be on the same part of the most auriferous formation we had taken the good samples from, consequently we have gone down 8 fms. on the same rise, to drive a small cross-cut to intersect the lode. This will be done in a few days, if the men attend; this being the season for putting seed in the ground, the attendance of the men is irregular.

LUSITANIAN.—Sept. 6: Palhal: River's shaft, below the 110, is holed to the rise above the 120. The men are taking down the lode and squaring the shaft. The rise above the 120 is holed to River's shaft.—Levels on Basto's Lode: The lode in the 150, east of Taylor's engine-shaft, is 2½ ft. wide, composed of quartz and stones of ore. The lode in the 150 fathom level west is 4 ft. wide, worth 1½ ton per fathom. The lode in the 140 east is 4½ ft. wide, composed of quartz and country. The lode in the 140 west is worth 1¼ ton per fathom. The lode in the 130 east is 5 ft. wide, composed of quartz. These men are removed to drive the 60, east of River's shaft, where the lode is 1½ ft. wide, producing stones of ore. The lode in the 130, west of Taylor's engine-shaft, is small and poor. We have got the slide, which is 6 in. wide, composed of flookan, and shall now drive on its course. The lode in the 120, east of Taylor's engine-shaft, is 6 ft. wide, composed of quartz and stones of ore. We are now driving on the north branch, which is 1 ft. wide, composed of quartz and country. Lode in the 110, east of River shaft, is 1½ ft. wide, composed of quartz. The lode in the 90, east of River's shaft, is 1 ft. wide, composed of flookan and country. The lode in the 70, east of River's shaft, is 7 ft. wide, composed of quartz, spotted with lead, worth ⅛ ton per fathom. The lode in the adit, west of Perez shaft, is 4 in. wide, with a string of rich ore in it ½ in. wide.—Levels on Mill Lode: In the 38, east of Taylor's, the lode is 8 in. wide, composed of flookan.—Level on Branch: In the 38, west of slide lode, the lode is in strings, all being poor. This lode is being driven to get under the winze No. 88, sinking below the 90 fathom level.—Winzes: In winze No. 86, below the 90 fm. level, east of River's shaft, the lode is 4 ft. wide, composed of quartz. In winze No. 88, below the 28, on branch, the lode is 6 in. wide, composed of country and small stones of ore.—Carvalhal: In the 60 fathom level cross-cut, north of incline shaft, the ground is a hard, close gneiss.—Levels on Great Lode: In the 30, east of incline shaft, the lode is 3 ft. wide, composed of quartz and stones of lead. In the 20 east the lode is 6 inches wide, composed of quartz.—Levels on Caunter lode: In the adit, west of incline shaft, the lode is 4 to 6 inches wide, composed of quartz. In the 10 west the lode is 1½ ft. wide, composed of quartz and mundic. In the 20 west the lode is 2½ feet wide, composed of loose quartz, gossan, mundic, and stones of lead. In the 30 west the lode is 1 foot wide, composed of quartz and mundic.

ALAMILLOS.—Sept. 13: The lode is large and strong in the 60 fm. level, west of San Rafael's shaft, yielding ¼ ton per fathom. In the 60, east of San Francisco, the lode is improving, yielding ⅛ ton per fathom. The lode in the 60, west of the same, is also of a better appearance, yielding ⅛ ton per fathom. There is no change to speak of in the 50, east of Magdalena. The 75, east of Taylor's engine-shaft, is opening out tribute ground, yielding 1 ton per fathom. The lode in the 50, west of San Yago, continues poor, but is letting out water rather freely. In the 30, east of San Victor, the lode is large, but of no value at present. The 40, of the same, is getting under the slide; the lode is of a very kindly appearance, containing a little lead in the bottom. The lode in the 30, east of Addis's, produces some good stones of lead, yielding ½ ton per fathom. In the 20, west of the same, the lode is very regular. In the 40, east of Crosby's, the lode is well defined, and the ground easier for driving through, yielding ⅔ ton per fathom. A cross head has disarranged the lode in the 50 of the same. The lode has become very vughy in the 40, west of Crosby's cross-cut, which has decreased its value, yielding 1 ton per fathom. The lode is split into branches, and is quite poor at present in the 30, east of Henty's. In the 20, east of Swafield's, very little has been done since last report, in consequence of the air being so bad.—Shafts and Winzes: San Adriano's shaft, below the 60, will be holed to the 75 in the course of a few days. The men are working very regularly in San Victor's shaft, below the 40. The lode in Rey's winze, below the 40, is heard north by the main slide. Alejandro's winze is going down through a good solid lode of lead, yielding 2 tons per fathom. There is a small branch of lead in Jaen's winze, below the 40, but not sufficient to value. Henty's, below the 90, is of the same description as when last reported, yielding ⅛ ton per fathom.

FORTUNA.—Sept. 13: Canada Incosa: In the 110, west of Henty's shaft, the men are enlarging the bottom of Henty's shaft, and will cut a plat forthwith. The lode in the 100 of the same is small, and not so productive as it was, yielding ½ ton per fathom. There is no alteration in the 80, south of Henty's shaft, worthy of notice. The lode in the 60, west of San Pedro, consists of quartz, carbonate of lime, and lead ore, yielding ½ ton per fathom. We are expecting an improvement in the 60, east of the same, yielding ½ ton per fathom. The lode is large and strong, with good stones of ore, in the 90, east of Addis's, yielding ¾ ton per fathom. In the 80, west of Lowndes', the lode is unproductive. The 80, east of Carro's, is opening very good tribute ground, producing 2 tons per fathom.—Shafts and Winzes: Judd's shaft, below the 90, being off the lode it is rather hard for sinking. The lode in Pedro's winze, below the 50, is spotted with lead.—Los Salidos: The lode in the 110, west of Buenos Amigos, is small, with a little lead, but not sufficient to value. The lode of the same is opening a good run of ore ground, yielding 2 tons per fathom. The lode is small, and less productive than it was in the 90, west of San Carlos, yielding ⅛ ton per fathom. The men in the 75 of the same are put to open the south side of the level to prove a small branch. The lode is small, compact, and regular in the 110, east of Buenos Amigos shaft, producing 1 ton per fathom. There is no improvement in the 110, east of Morris's engine-shaft. The lode in the 100, east of Cox's, continues very small, yielding ⅛ ton per fathom. The back of the 25, west of Palgrave's, is in old works, and the men are now stoping down the forebreast, producing ½ ton per fathom.—Shafts and Winzes: San Miguel shaft, below the 75, is holed to the 90, yielding 3 tons per fathom. In San Pablo's, below the 90, the ground is hard for sinking, and the lode small, yielding 1 ton per fathom. The lode in San Carlos, below the 90, is compact and firm, producing 2 tons per fathom. Jorge's winze, below the 90, is failing off in value a little, yielding 1½ ton per fathom. There are still small branches in Palgrave's engine-shaft, below the 25, yielding ⅛ ton in a fathom. The stopes yielded very well in the past month, and the tribute department is at present looking much as usual. The operations at surface are going on very regularly, and the machinery is in good working order.

LINARES.—Sept. 13: Pozo Ancho Mine: The lode is compact and regular, and yielding good stones of ore in the 85, west of Crosby's shaft, full 1 ton per fathom. In the 75, of the same, the lode is very open, and of a kindly appearance, yielding 1 ton in a fathom. The lode in the 75, west of San Francisco, is small and unproductive. The lode is large and strong in the 65, east of the same, consisting of quartz and lead ore, yielding 1 ton in a fathom. The ground is very hard, and the lode small and poor, in the 65, west of the same. In the 55, of the same, the lode is small, consisting of calcareous spar and lead ore, yielding ⅛ ton in a fathom; the lode is disordered and poor. In the 45, east of San Francisco.—Los Quinientos Mine: The lode in the 65, east of Taylor's engine-shaft, is small, and of no value. The 65, west of the same, without change since last reported. In the 55, of the same, the lode is large and of a very kindly character, yielding ¾ ton in a fathom. In the 33, east of the same, the lode is still large, yielding good stones of lead ore. The lode shows indications of improvement in the 45, east of Addis's. In the 32, of the same the lode has very much improved during the past week, yielding 1 ton in a fathom. The lode presents a kindly appearance, and is yielding fine stones of lead ore in the 35, west of Henty's. The 32, east of the same, is quite unproductive. The lode in the 32, west of San Carlos, is small and poor, and ground hard for driving through. In the 45, of the same, the lode is large, consisting of decomposed granite and lead ore, yielding 1 ton per fathom. The 45, east of San Carlos, is opening up a splendid run of tribute ground, yielding 3 tons in a fathom. The 55 fathom level cross-cut, south of the same, is a new one, started from the bottom of San Carlos shaft to intersect the lode at this level.—Shafts and Winzes: The lode in Salvador's winze, below the 35, is solid and compact, looking kindly, yielding ⅛ ton in a fathom. Esteban's winze, below the 32, is a new one, commenced east of Martin's winze, yielding 1 ton in a fathom. The lode in Rafael's, below the 44, is quite unproductive. Camona's, below the 44, is going down in a large, strong, and kindly lode, yielding 1 ton in a fathom.

[For remainder of Foreign Mines see to-day's Journal.]

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